IN THE CLAIMS

1-5. (Canceled)

6. (Currently Amended) A computer implemented method comprising:

maintaining a first set of information for a first layer 3 virtual private network (VPN) context, the first set of information for including a first value identifying the first layer 3 VPN context;

separately maintaining a second set of information for a second layer 3 VPN context, the second set of information for including a second value identifying the second layer 3 VPN context, wherein the first and second sets of information corresponds to a first and second customers accessing a backbone and maintained within a single network element of the backbone, and wherein the first and second sets of information include sufficient information to establish the first and second layer 3 VPNs contexts with other network elements of the backbone for the first and second customer respectively;

~~associating the first value with a first route distinguisher;~~

~~associating the second value with a second route distinguisher;~~

maintaining on a single network element a single exterior gateway protocol (EGP) table for the first and second layer 3 VPNs contexts, wherein the single EGP table comprises EGP forwarding entries for the first and second layer 3 VPNs contexts;

maintaining on the single network element separate ~~a~~ VPN context specific first routing and interior gateway protocol (IGP) tables for the first layer 3 VPN context, wherein the first ~~routing~~ IGP table comprises ~~interior gateway protocol (~~IGP~~)~~ forwarding entries for the first layer 3 VPN context and the first routing table comprises the IGP and EGP forwarding entries for the first layer 3 VPN, and wherein the maintaining the first routing table includes downloading to the first routing table the first layer 3 VPN context specific entries from the EGP and first IGP tables; and

maintaining on the single network element ~~a~~ separate VPN context ~~,~~ specific second routing and IGP tables for the second layer 3 VPN context, wherein the second ~~routing~~ IGP table comprises IGP forwarding entries for the second layer 3 VPN context and the second routing table comprises IGP and EGP forwarding entries for the second layer 3 VPN, and wherein the maintaining the second routing table includes downloading to the second routing table the second layer 3 VPN context specific entries from the EGP and second IGP tables.

7. (Original) The computer implemented method of claim 6 further comprising:

separately maintaining a third set of information for a non-VPN customer, the third set of information for including a third value identifying the non-VPN customer; and

maintaining a second EGP table for the non-VPN customer.

8. (Currently Amended) The computer implemented method of claim 6 further comprising:

associating the first value with a first route distinguisher;

updating a set entries for the first layer 3 VPN context in the single EGP table, each of the set of entries indicating the first route distinguisher;

mapping the first route distinguisher to the first value; and

indicating the mapped first value in communication about the updated set of entries.

9. (Currently Amended) The computer implemented method of claim 6 further comprising:

associating the first value with a first route distinguisher;

associating the second value with a second route distinguisher;

maintaining a data structure for the single EGP table, the data structure indicating the association between first value and the first route distinguisher and between the second value and the second route distinguisher; and

performing mappings between the first value and the first route distinguisher and between the second value and the second route distinguisher with the data structure.

10-22. (Canceled)

23. (Currently Amended) A machine-readable storage medium that stores instructions, which when executed by a set of one or more processors, cause said set of processors to perform operations comprising:

maintaining a set of information for a first layer 3 virtual private network (VPN-) context, the first set of information for including a first value identifying the first layer 3 VPN context;

separately maintaining a second set of information for a second layer 3 VPN context, the second set of information for including a second value identifying the second layer 3 VPN context, wherein the first and second sets of information corresponds to a first and second customers accessing a backbone and maintained within a single network element of the backbone, and wherein the first and second sets of information include sufficient information to establish the first and second layer 3 VPN contexts with other network elements of the backbone for the first and second customer respectively;

associating the first value with a route distinguisher (RD-);

associating the second value with a second RD;

maintaining a data structure to perform mappings between the first value and the first RD and between the second value and the second RD;

maintaining on a single network element a single exterior gateway protocol (EGP) table for the first and second layer 3 VPN contexts, wherein the single EGP table comprises EGP forwarding entries for the first and second layer 3 VPN contexts;

maintaining on the single network element ~~a~~ separate VPN context -specific first routing and interior gateway protocol (IGP) tables for the first layer 3 VPN

context, wherein the first ~~routing~~ IGP table comprises ~~interior gateway protocol (~~IGP~~)~~ forwarding entries for the first layer 3 VPN context and the first routing table comprises the IGP and EGP forwarding entries for the first layer 3 VPN, and wherein the maintaining the first routing table includes downloading to the first routing table the first layer 3 VPN context specific entries from the EGP and first IGP tables; and

maintaining on the single network element separate ~~a~~ VPN context -specific second routing and IGP tables for the second layer 3 VPN context, wherein the second ~~routing~~ IGP table comprises IGP- forwarding entries for the second layer 3 VPN context and the second routing table comprises IGP and EGP forwarding entries for the second layer 3 VPN, and wherein the maintaining the second routing table includes downloading to the second routing table the second layer 3 VPN context specific entries from the EGP and second IGP tables.

24. (Previously Presented) The machine-readable storage medium of claim 23 further comprising:

separately maintaining a third set of information for a non-VPN customer, the third set of information for including a third value identifying the non-VPN customer; and

maintaining a second EGP table for the non-VPN customer.

25. (Previously Presented) The machine-readable storage medium of claim 23 wherein the mappings are performed for communications about the single EGP table.

26-29. (Canceled)

30. (Currently Amended) A machine-readable storage medium that stores instructions, which when executed by a set of one or more processors, cause said set of processors to perform operations comprising:

maintaining a first set of information for a first layer 3 virtual private network (VPN) context, the set of information for including a first value identifying the first layer 3 VPN context;

separately maintaining a second set of information for a second layer 3 VPN context, the second set of information including a second value identifying the second layer 3 VPN context, wherein the first and second sets of information corresponds to a first and second customers accessing a backbone and maintained within a single network element of the backbone, and wherein the first and second sets of information include sufficient information to establish the first and second layer 3 VPN contexts with other network elements of the backbone for the first and second customer respectively;

associating the first value with a first route distinguisher;

associating the second value with a second route distinguisher;

maintaining on a single network element a single exterior gateway protocol (EGP) table for the first and second layer 3 VPN contexts, wherein the single EGP table comprises EGP forwarding entries for the first and second layer 3 VPN contexts;

maintaining on the single network element separate ~~a~~ VPN context -specific first routing and interior gateway protocol (IGP) tables for the first layer 3 VPN context, wherein the first ~~routing~~ IGP table comprises interior gateway protocol (IGP) forwarding entries for the first layer 3 VPN context and the first routing table comprises the IGP and EGP forwarding entries for the first layer 3 VPN, and wherein the maintaining the first routing table includes downloading to the first routing table the first layer 3 VPN context specific entries from the EGP and first IGP tables; and

maintaining on the single network element ~~a~~ separate VPN context -specific second ~~routing~~ IGP and routing tables for the second layer 3 VPN context, wherein the second ~~routing~~ IGP table comprises IGP forwarding entries for the second layer 3 VPN context and the second routing table comprises IGP and EGP forwarding entries for the second layer 3 VPN, and wherein the

maintaining the second routing table includes downloading to the second routing table the second layer 3 VPN context specific entries from the EGP and second IGP tables.

31. (Previously Presented) The machine-readable storage medium of claim 30 further comprising:

separately maintaining a third set of information for a non-VPN customer, the third set of information including a third value identifying the non-VPN customer; and

maintaining a second EGP table for the non-VPN customer.

32. (Currently Amended) The machine-readable storage medium of claim 30 further comprising:

updating a set entries for the first layer 3 VPN context in the single EGP table, each of the set of entries indicating the first route distinguisher;

mapping the first route distinguisher to the first value; and

indicating the mapped first value in communication about the updated set of entries.

33. (Previously Presented) The machine-readable storage medium of claim 30 further comprising:

maintaining a data structure for the single EGP table, the data structure indicating the association between first value and the first route distinguisher and between the second value and the second route distinguisher; and

performing mappings between the first value and the first route distinguisher and between the second value and the second route distinguisher with the data structure.